

Newfoundland's New Industry

A SOUVENIR AND A RECORD ISSUED
TO COMMEMORATE THE
OPENING OF THE

Pulp and Paper Mills

at

GRAND FALLS,

RIVER OF EXPLOITS, NEWFOUNDLAND,
BY LORD NORTHCLIFFE,
OCTOBER 9, 1909

The Anglo-Newfoundland
Development Co., Ltd.

GRAND FALLS

NEWFOUNDLAND



LORD NORTHCLIFFE.

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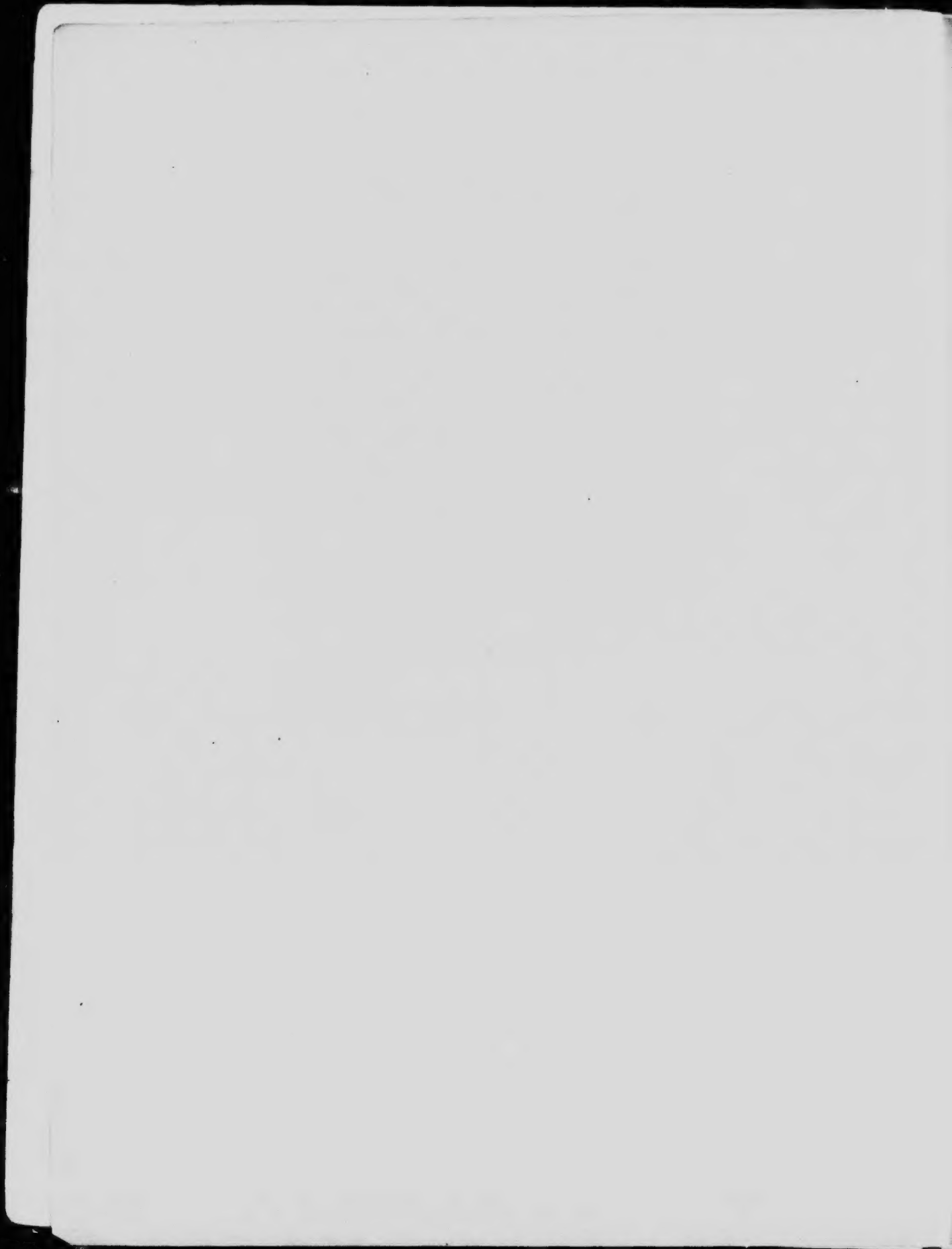
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GRAND FALLS, RIVER OF EXPLOITS.

Introductory Note



WE are indebted to the courtesy of Mr. P. T. McGrath for his kind permission to reprint, in book form, the articles which he recently wrote for and published in the St. John's *Evening Chronicle*, on Newfoundland's newest industries in the Exploits River Valley.

Mr. McGrath has described clearly and concisely the intricacies and the complicated mechanical details of the manufacture of wood pulp and paper from the time that the axe is put to the tree in the forest to the shipping of the finished bales and reels on the cars in the train shed.

The formal Opening of the Grand Falls' Mills by Lord Northcliffe, the Founder and Head of the great group of Publishing Businesses—the Parents of whom the Anglo-Newfoundland Development Company is the child,—marks a Red Letter day in the Industrial History of Newfoundland. It opens a new chapter in her commercial development full of hope and promise for the future welfare of Great Britain's Oldest Colony.

To the harvest of the sea—hitherto the sole source of existence since the days of Cabot for nine out of ten families in the Island—will now be added the harvest of the forest.

To those who attend the Opening as new-comers and guests this little booklet is presented as a Record of the work achieved in the construction and equipment of this plant, and a Guide to its understanding during their tour of inspection.

To those who have been engaged on the work and are familiar with all its details as employees of the Company, whether on the staff, or as foremen, or in the ranks of labour, it will, I hope, also, serve as a Record and Souvenir of our four years of strenuous Endeavour, loyal Co-operation and Success finally achieved, in face of the thousand and one difficulties which have beset our enterprise, as they must beset all Pioneer enterprises, in a new country.

It is a Record of Success achieved, of which all may well feel proud and which has only been rendered possible by the unflagging zeal, energy and devotion of all concerned, from the highest to the lowest, whether in the Field, in the Office, on the Works, in the Woods or on the River.

During the last few months especially, of extra stress and strain, when the work has been concentrating to a finish, and when special calls for special efforts and exertions have been continuously made by those in charge of every department of the work all along the line, never has there failed a cheerful and ready response from those under them.

To these, my colleagues and fellow-workers in our four years' Task, now so nearly concluded, this little booklet is dedicated in sincerest appreciation of good work done and loyal service rendered.

MAYSON M. BEETON,
President A.-N. D. Co., Ltd.

Grand Falls, October 1st, 1909.

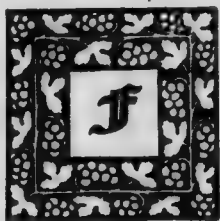




HOW THE COFFER DAM WAS STARTED.

Newfoundland's New Industry

THE RECORD OF FOUR YEARS' WORK.



OUR years ago this last July Mr. M. M. Beeton, President of the Harmsworth enterprise, camped in a tent on the bank of the Grand Falls of the Exploits River to survey and decide on the site of the new pulp and paper mills at that place. It was then, so to speak, a wilderness almost untrodden and without a solitary inhabitant. To-day it is the site of an enterprise that promises to make it within a few years the second town in the island in point of population and commercial interest. Mill buildings of concrete, covering several acres, have been erected there and equipped with costly and up-to-date machinery, many miles of railway have been built with large terminal wharves at the sea-coast, and dams, booms and boom-piers constructed in the river, all of which represent many working months of labor and thousands of tons of material, the whole standing for an outlay of some millions of dollars. A town site has been laid out with streets and locations for public buildings; a system of sanitation has been provided; homes for the staff, hotels for the workmen, and residences for the chiefs of the various departments have been erected; and the Company is now preparing to build one hundred more workmen's and foremen's houses before the snow falls. Nearly one thousand men are employed there daily and the payments of wages, including the operations in the woods near Millertown, have been for the last year aggregating \$60,000 a month, or nearly \$750,000 per annum.

THE HYDRAULIC WORKS.

At Grand Falls the Exploits River flows over a series of declivities extending nearly one-half mile, the stream making a bend at this point, and between the top and the bottom there is a fall of one hundred and twelve feet. At the highest point a solid concrete dam has been built eight hundred and eighty-two

feet long, twenty-four feet wide at the bottom, gradually diminishing to six feet at the top, and from twenty to twenty-five feet in height. Wing dams increase the length to 1,400 feet and there were used in its construction 19,000 barrels of cement, 8,000 cubic yards of sand, and 13,000 cubic yards of rock. A forebay is provided with eight gates, twelve feet high and eight feet wide. The forebay in this case is a basin about one hundred and fifty feet square and twenty feet deep and from this basin to the power house and grinder room the 25,000 horse power volume of water will flow through steel racks into two steel pipes fifteen feet in diameter and 2,150 feet long. The rolling, rivetting and laying of these pipes were completed recently in four and one-half months. The weight of the material used was 2,000 tons of steel, or more than sufficient to build a steamer of the size of the Florizel. The excavations for the forebay and these pipes, technically known as penstocks, amounted to about 25,000 cubic yards of rock. The head gates control the supply of water to the "flume," or tubes, while the steel rack-irons, or screens, one hundred and twenty-three feet long by twenty-seven feet high, will prevent debris from getting through the pipes into the turbines.

POWER HOUSE CUT FROM ROCK.

The Power House and Grinder Room is a building two hundred and seventy feet long by sixty feet wide and fifty feet high, the site being cut out of the solid rock at the foot of the rapids by air drills and dynamite charges. It is located forty feet from the river bed. In building this structure one hundred and sixty men were employed, working night and day for several months with arc lamps to give light during the darkest hours. At the northern end are two 2,500 horse power dynamos for furnishing light and power for the plant, the remainder of the building being taken up by turbines, operating pulp wood grinders. There are three turbines in the electric generating room and four double turbines in the grinding room, each one of the latter furnishing power to six grinders. Each of the twenty-four grinders can turn out about ten tons of dry pulp per 24 hours, or two hundred and forty tons daily. Of that quantity eighty tons will go for the manu-



HOW THE COFFER - DAM WAS BUILT IN SECTIONS ACROSS THE EXPLOITS RIVER

facture of paper and the surplus into the pulp-making machines, where it will be pressed and prepared for export. As it takes two tons of wet pulp to make one ton of dry there will be about three hundred and twenty tons of wet pulp available every day for export.

MAKING SULPHITE PULP.

In addition to the manufacture of this "mechanical" pulp the company will also make "sulphite" pulp. For this purpose a square steel tower, thirty feet square at the base and two hundred feet high, has been built, at the top of which there is a tank containing 150,000 gallons of water for the town and mills water service. In this tower are six round wooden cylinders, six feet in diameter and rising one hundred and fifty feet from the ground. These will be filled with lime stone and below them there will be a sulphur burning chamber, in which Louisiana sulphur will be roasted. The fumes given off by the sulphur will pass up through the lime, while at the same time a slow stream of water will be let on to the lime from the top and trickle down through, thus making sulphurous acid, or bi-sulphite of lime. The sulphurous acid will be stored in large vats adjoining a large building near the tower, the highest building by far of the series erected at Grand Falls, and known as the "Digester" Building. In appearance it resembles the grain elevators, which one sees in the pictures of Western Canadian towns. It is seventy-five feet long, thirty-two feet wide and one hundred and twelve feet high, the upper story being somewhat narrower than the rest of the building, much as the great barn at Mount Cashel Orphanage is. In this building are two huge upright steel boilers, or "digesters," as they are called. These will be filled from time to time with wood chips. The wood that is used for making sulphite pulp is not ground, as is that for mechanical pulp, but is chipped by machines across the grain, making a chip about an inch square. When the tanks are filled, sulphurous acid and steam are let into them and the wood chips are slowly "cooked" into sulphite pulp, which is used with the ground wood or mechanical pulp to give paper its strength.

CONVEYING THE LOGS.

As the water is carried through the pipes to the power house, so the logs which are brought down the Exploits River and held in booms above the dam are taken out and passed along a conveyor from the cutting-up mill to the "barker" room. This conveyor is a trestle work of Georgia pine, sixty feet high and 1,700 feet long, and it will store a winter supply of pulp logs. An endless chain works above and below the trestle and will run either way, carrying the logs from the water to and from the barking room, where they are stripped of their bark. The "cutting-up" mill has a capacity of six hundreds cords of wood daily, or about 350,000 feet B.M. There is another trestle near, carrying a railway track to an area where there is room for the storage of 10,000 tons of coal. The works will consume about 30,000 tons of coal annually, for heating the buildings, providing steam for use in the paper making machines, "cooking" the sulphite, and running the "break-down" water service pumps. In the boiler room there are five coal-burning boilers, each of four hundred horse power, using forty tons of coal per day each, and alongside these are three other boilers of two hundred and fifty horse power each, which burn all the bark, sawdust, chips and other refuse. All this material is assembled in a receptacle near these boilers and is fed to them by conveyors to the Dutch oven furnaces. The idea is, of course, to make all the steam possible at the mills by means of this refuse material; firstly, because it lessens the coal bill; and, secondly, because it gets rid of the mountains of debris which would otherwise accumulate around the mills.

INGENIOUS BOILER EQUIPMENT.

The coal furnaces are also fed automatically. As the coal comes in by the cars it is dumped into crushers, where the lumps are broken up and then taken by a bucket conveyor to the top of the boiler house, whence it passes on to a distributing belt, which drops it into a large bin. From this bin small chutes run to each furnace and the coal is thrown automatically into the fires, while the grates, moving up and down mechanically, stoke themselves and drop the clinkers to the bottom of the ash-pit. The





HOW THE CONCRETE DAM WAS BUILT ACROSS THE BED OF THE RIVER.

ashes are pulled out by hand, this being the only manual operation in connection with the whole procedure, and put on a conveyor that carries them to a hopper which opens by a valve into cars below. One man can attend to six furnaces and all these series of operations are controlled by a small steam engine fixed near the boilers. The smoke from the furnace in its turn passes through a smoke conveyor, which carries it into an apartment where there are a series of pipe-like radiators. Through these pipes all the heated water that is used in the manufacture of paper comes after it has performed its function, and the smoke, steam and gas from the furnaces, going between these pipes of partly-heated water, boil the water again and send it back into the boilers, while the soot is deposited on the outside of the pipes and is scraped off by knives working up and down automatically, so that no smoke whatever goes into the outer air. The water, as heated a second time and sent into the boilers, of course, increases the amount of steam available, while the surplus steam from the furnaces is again used to operate the forced draught fans for the furnaces. A "head" of steam is, therefore, always available and a contrivance exists by which, when too much steam is on, a whistle is blown and the speed of the fans can be lessened. Another whistle blows when the water gets too low, so that the men in charge of the boilers can add to the supply.

THE "SAVE-ALL" BUILDING.

There is one more noteworthy building, the one in which is housed a contrivance termed the "Save-All," through which all the water from the pulp and paper making apparatus passes and any pieces of pulp remaining in the water are secured by a screen so that absolutely nothing is lost. Any oil, refuse or other material that would spoil the quality of the pulp is eliminated by the "Save-All" machinery and it will be seen, therefore, that just as the bark, sawdust, shavings, etc. are utilized on the one hand to keep down the fuel bill so, on the other hand, every possible device is brought to bear to reduce to a minimum any loss of the precious wood fibres during the process of manufacture. Outside the grinder room is another huge tank shaped like a great punch

bowl of 250,000 gallons capacity, in which ground pulp can be stored if the supply to the machines is too great or it becomes necessary from any cause to shut down the Grinder Room for a few hours.

PROCESS OF MANUFACTURE.

The main buildings of the Pulp and Paper Mills at Grand Falls cover an area of about six acres. The buildings extend from east to west some 150 feet, and from north to south 550 feet. The largest building of the series is the Paper Machine Room, which has the greatest floor space of any structure in the Island, being greater than the R. C. Cathedral in this city. It is 234 feet long by 121 feet wide and 44 feet high, constructed of reinforced concrete, that is to say, concrete with steel rods through the upright portions and steel netting in the floors to help give strength to the fabric. In this building are set huge machines for the manufacture of paper. The process of manufacture is very interesting. After the logs have been taken from the river they are cut into thirty-two inch lengths by an automatic saw and then carried along the pitch-pine conveyor to the barking or wood-preparing rooms. The "barkers" consist of many knives revolving at high speed and ridding the blocks of their outside coat very rapidly. When this is done the blocks are conveyed to the Grinder Room where they fall through a trap into a pit filled with water. During the winter the water in this pit is heated by steam to rid the blocks of any frost there may be in them. After being saturated the blocks are taken to the grinders, which huge machines consist of a grinding stone and three holders to grip the block and force it against the face of the stone by hydraulic action at a pressure of five tons. It thus really acts as a brake upon the grinding stone, which is revolving at a speed of two hundred revolutions a minute, and one can, therefore, imagine what power it takes to overcome this pressure and reduce the logs into pulp. From the grinders the pulp, or "stock," as it is called at this stage, is pumped to flat screens of thin brass sheeting, perforated with very fine holes or slits.





THE CREST OF THE DAM, FROM THE FOREBAY WALL.

HOW PULP IS MADE.

The "stock" is run on to these sheets from pipes and below the screens works a rubber diaphragm, the inside of which is a vacuum and so it sucks through the brass sheet all the finest of the stock, the coarser material being returned to "refiners" to be reduced to a finer course and made into "cardboard." From the flat screens the first-class stock is pumped to the wet machines, the principle of which is that of two wheels revolving in opposite directions. The lower wheel is a cylinder covered with fine wire cloth, through which the water escapes, while the pulp adheres to it. From the wire cloth the pulp is brought over by a felt cloth, covering the upper revolving roller, to which it adheres, and when the layer on the roller becomes about a quarter of an inch thick, the operator scrapes a sharp stick along the roller and peels the pulp off in a sheet. Each sheet as it comes off is folded and placed between wire mats, and when a number have been piled one above the other in this way, they are placed in hydraulic presses and the water squeezed out under a pressure of 200 tons. This pulp, when it is not to be made into paper at once, is then stocked for shipment.

MAKING PULP INTO PAPER.

If, however, the pulp is to be made into paper, a somewhat different process is followed. The stock is not made into sheets, but remains in the form of "slush" and drops from the screens into a tank below, whence it is pumped to a beating engine, where it is mixed with a portion of sulphite or chemical pulp. Sulphite pulp gives the requisite toughness to mechanical pulp which enables it to be made into paper. Mechanical pulp, until strengthened by the addition of sulphite pulp, is somewhat of the consistency of wet blotting paper and possesses no "toughness" or resistance. This is imparted to it by the sulphite. The mixed pulp is then carried to the paper machines. They consist of a double row of about forty rollers, or cylinders, filled with steam inside, which dry the water out of the material until it is entirely eliminated, and the finished product appears in the form which we handle every day when we read the news. The paper passes through

the machines at the rate of ten feet a second, 600 feet a minute, or 36,000 feet an hour. The *Chronicle* is printed on a press which gives 6,000 impressions per hour, and assuming the length of the paper at two feet, that means that 12,000 feet of paper pass through our press each hour. The speed of the paper making machines is, therefore, three times as great, and anybody who has seen one of the newspaper presses in this city in operation can form an idea of the speed at which these paper making machines are worked. The operation of "beating" the pulp before it goes into the paper making machines is performed in a building adjoining, which is 198 feet long by 132 feet wide and 48 feet high. As the finished paper goes through the final process it is wound into long rolls of varying widths, according to the purposes for which it is to be used. These are the rolls which are familiar to visitors of newspaper offices, the paper being unrolled in them in turn, months, or it may be years afterwards, for the printing of the newspaper. Each roll, according to its thickness, will represent a continuous strip of paper from five to ten miles long.

PREPARING PAPER FOR SHIPMENT.

The rolls as they are taken from the machines are conveyed into the Finishing Room connected with the Machine Room, where they are wrapped and made ready for shipment. This finishing room is 210 feet long by 60 feet wide and 16 feet high. Next to this room is a train shed 210 feet long, 40 feet wide and 26 feet high, which has not a particle of wood in its construction, the roof, beams, girders, etc, being of concrete and steel. Into this building the trains will run to allow the paper to be loaded directly into the cars for shipment abroad, and on the other side beyond the two tracks is a building of similar size to the finishing room, for the storage of surplus paper, where the completed article can be housed until shipping facilities are secured.

EFFECTIVE FIRE PROTECTION.

All over the whole of the mills, on the roofs of every building, are water pipes with patent sprinklers at ten foot intervals which, when the heat in the building reaches a certain temperature, will automatically burst the composition seal and allow a





BIRD'S-EYE VIEW FROM THE TOP OF THE ACID TOWER.

powerful stream of water to escape that should immediately extinguish any fire that might break out, this being the most modern form of fire protection for mills and factories. The company has a regularly organized fire department with a complete equipment of hose, etc. There are hydrants at various points all over the mill area and small houses painted red, in which fire-fighting apparatus is stored. A watchman is constantly on duty day and night in a central station; telephones connect every department with him; the huge tank on top of the acid tower has an abundant supply and an adequate head to cope with any outbreak and the non-inflammable character of the buildings themselves reduces the prospect of a conflagration to a minimum. Recently the digester house took fire, supposedly through a red hot rivet from the acid tower being carried by the wind on to the roof. But the fire force turned out rapidly and the outbreak was soon quenched. There are 2,365 of these sprinkler heads under the roofs and they will discharge thousands of gallons of water every te.

INTERESTING FACTS AND FIGURES.

In the construction of the dam and the various buildings a grand total of 70,000 barrels of cement has been used, or ten large steamer loads, the machinery with which the plant is provided representing an equivalent bulk. The sewer from the mills to take off the waste water from the various processes has a capacity of 15,000,000 gallons per day or five times the total daily water supply of the town of St. John's from Windsor Lake. It has its outlet below the turbine from which discharges the water that passes through the turbines for the generation of power. To guard against the contingencies incident to such an enterprise an accessory steam plant is provided to generate electricity and also to work the pumps when the turbines are shut down, and how very important a part electricity plays in this whole enterprise may be imagined from the fact that there are seventy motors of various sizes driving different parts of the plant.

The two Digesters will turn out fifty-five tons of sulphite pulp daily, part of which will go to make paper and the rest will be exported. The plant, when it is in full working order, will

ship 2,500 tons of pulp and paper each week, and it is proposed first to charter and then build steamers of 5,000 to 7,000 tons capacity to ply fortnightly between England and Botwoodville, bringing out probably Welsh coal for the use of the Harmsworth and Albert Reed Companies, and taking back cargoes of paper and pulp from these two concerns.

The daily consumption of sulphur and limestone will be about five tons of each. The limestone is being brought from Marble Mountain, Humber River, and the sulphur from Louisiana. A store 100 feet long by 40 feet wide and 20 feet high has been built to contain the shipments of sulphur. Connected with the digester buildings are the blow pits, into which the sulphite pulp is discharged, and the sulphur burning room, where the sulphur will be burned, so as to produce the necessary gas to operate with the lime in making sulphurous acid. A splendidly equipped machine shop and foundry is maintained in connection with the plant and we can well believe that the claim of the Harmsworth Company is fully justified, viz:—that their plant is the finest of its kind in the world to-day, as it includes every device found of value in previous installations, as well as a number of novel ideas now introduced.

Planned and designed by Mr. George F. Hardy, the eminent New York engineer, the Grand Falls mills have given to Newfoundland the claim to possess absolutely the finest and most up-to-date pulp-paper plant in the whole world. The work of construction and erection has been conducted and superintended in its first stages by Mr. Lincoln and now by Mr. Riley, the permanent Superintendent.

The whole installation was designed by Mr. George F. Hardy, the famous hydraulic engineer of New York, and its construction was carried out under the supervision of Mr. William Scott, C.E., the Company's Resident Engineer, and of Mr. Hardy's Chief Engineer in charge at the site, Mr. T. Remsen, of New York, assisted by Mr. Janes. Mr. J. P. Riley, one of the International Paper Company's best known mill managers, has taken charge as the permanent Mill Superintendent, assisted by a staff of skilled Ameri-





GENERAL VIEW OF THE MILL BUILDINGS FROM THE NORTH.

can expert foremen, in charge of the various important branches and departments. We feel confident that under his control and guidance and that of his expert corps of fellow American assistants, the Newfoundlander will prove himself as apt a pupil in the art of pulp and paper making as he already has in the work of construction and erection.

BUILDING UP A MODEL TOWN.

Following out the best traditions of British commercial enterprise, the Harmsworth Company are leaving nothing undone to conduce to the comfort and health of the employees. Last year an eminent medical expert was brought out to study the problem of sanitation of the new town and a commendable scheme, with this end in view, is being put in operation under the supervision of Dr. Chamberlain, the resident physician. The water supply for the town will be obtained from the river well above the Falls and purified by passing through filters of sand, just as London's water supply is. As already stated, one hundred cottages for working men will be built this autumn, and others will follow as the town grows. A commodious hospital is also to be built, with accommodation for fifteen patients. Lord and Lady Northcliffe, during their visit to Grand Falls last winter, donated \$10,000 towards the erection and equipment of this hospital and for other public purposes.

SCHOOLS AND CHURCHES.

Non-denominational schools are established at Grand Falls and at Millertown, and there is a public hall in each place that also serves the purpose of a church on Sundays for the several denominations. The Catholic community at Grand Falls has erected a church of its own already; the Anglicans are planning for the erection of a church and parsonage this fall; and the Methodists will probably follow their example later on. In the centre of the village is the Company's store, where everything that the needs of such a community call for can be obtained. The Company turns over the surplus profits of this store to a town committee, consisting of representative citizens, to be utilized for public improvements. Last year these profits were about

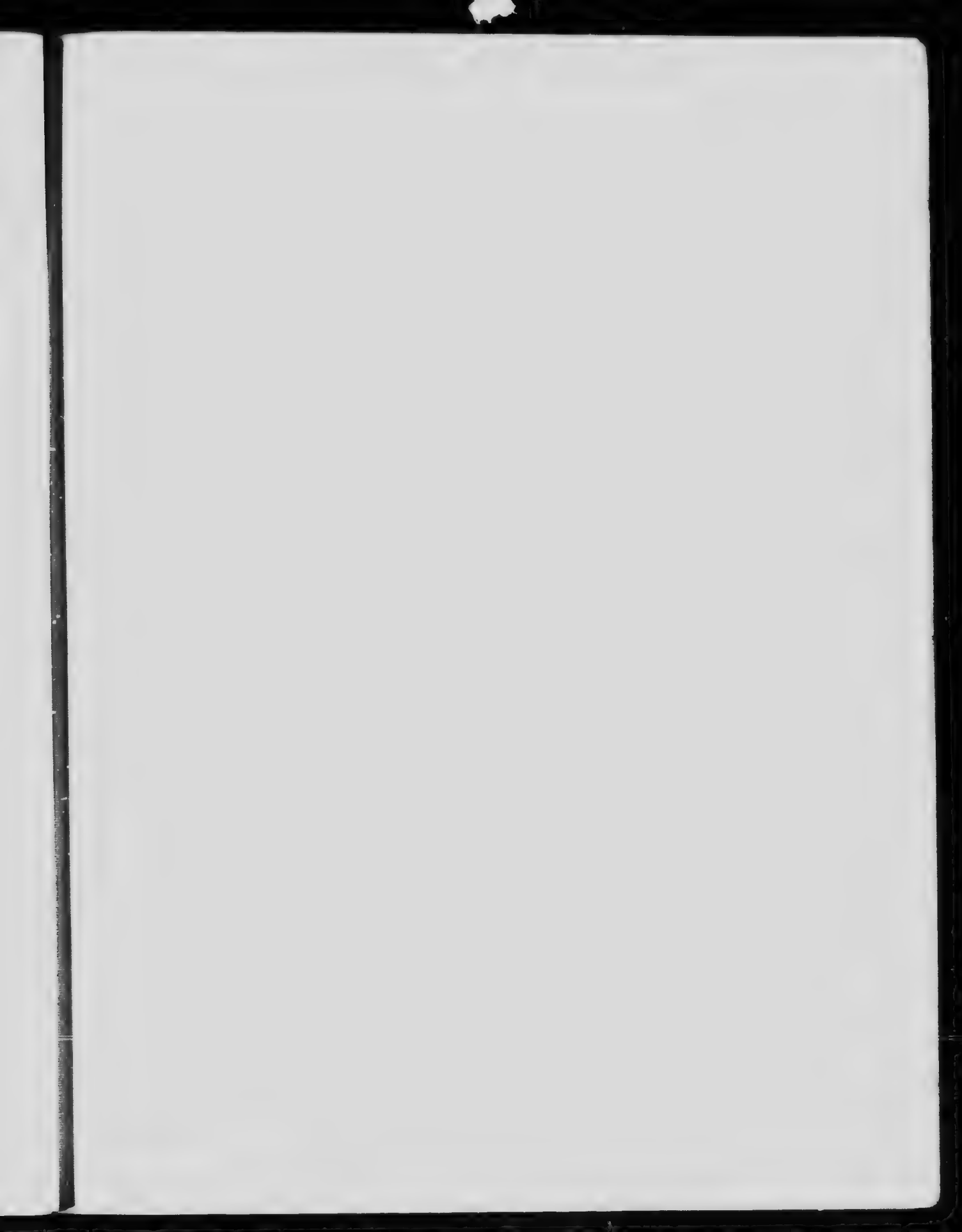
\$1,000, and they were devoted to helping the school and the providing of a sporting ground, where football, baseball and cricket are played each two evenings a week, and to other objects of general advantage. A boys' brigade has been established and has a membership of nearly one hundred, and, with the Company's assistance, it is hoped soon to have a band.

COTTAGES TO REPLACE "SHACKS."

There are now nearly 1,000 men at work at Grand Falls and many of them are residing temporarily in shacks. It is hoped to be able to tear all these down before next winter and to house those occupying them in the new cottages. The streets are about one hundred feet wide, and provision is made for open spaces and playgrounds. The works are lighted with electricity and the streets and cottages will be similarly lighted in the near future. The Company, in addition to owning twenty miles of railroad between Millertown and Millertown Junction, has just built another railroad, twenty-three miles long, from Grand Falls via Bishop Falls to Botwood, in connection with the Albert Reed Company, and this will be opened for regular traffic before winter sets in.

FARMS AND GARDENS.

Mr. Beeton, who is an enthusiast in gardening and farming, as well as in sanitation, believes strongly in encouraging the operatives to engage in the cultivation of kitchen gardens, and has set out a substantial plot near his own handsome residence, the "Log House," which is situated on a bluff in a splendid location overlooking the river about a mile above the mills. This "Home Farm" is several acres in extent and is sown with vegetables. It is under the direction of Mr. Albert Bayly, who has also charge of the Company's large farm at "Farmdale," near Rushy Pond, three miles up the line from Grand Falls. He has nearly eighty acres of land cleared in all, and from these farms the town is largely supplied with vegetables, meat and milk. The "Home Farm" is an example of the possibilities of agricultural production in this country for, though part of it has only been





WHERE THE PENSTOCKS BRANCH DOWN THE SLOPE TO THE POWER HOUSE

cleared this year, all the crops sown in it showed splendid progress when viewed by the writer some few weeks ago. The one structure within the town limits which is out of harmony with the general scheme and the prospective importance of the town is the Government building, in which are located the Post, Telegraph and Customs Offices. It is but a little larger than a watch-house on a merchant's wharf in this city and the residents say, and with justice, that the time has arrived when there should be a creditable public building erected which could serve as a Court House and contain these offices as well.

In anticipation of the making of the first paper this autumn extensive preparations are being made for another visit by Lord and Lady Northcliffe and some friends, and a small country residence in the English style is being erected for them now. There are two stories and an attic, and the concrete basement has an outer shell of broken stones very artistically contrived. The lower story will be composed of squared pine logs standing upright. The second story will be of extra solid frame construction, shingled outside, and the roof will be of rustic style, relieved by artistic dormer windows.

Grand Falls boasts of a baker, butcher, barber, shoemaker and photographer already. Within a few years the town will be, in point of population and commercial interest, second to none in the Colony, for the works will necessitate a goodly resident population who, as a result of the constant employment and good wages, will be in a condition of financial and economic prosperity unexcelled by those of any other place within our borders. Their growing needs for the provision of food should gradually cause the neighbouring sections of land to be tilled and cultivated by farmers, who will find here an assured market for their produce.

ON RED INDIAN LAKE.

The originator of the pulp and paper industry in this island may be said to be the late Mr. Lewis Miller, the Scotch lumberman, who came here nine years ago and began lumbering operations at Millertown. It is noteworthy that though Mr. Miller did not make any great amount of money out of the cutting and exporting

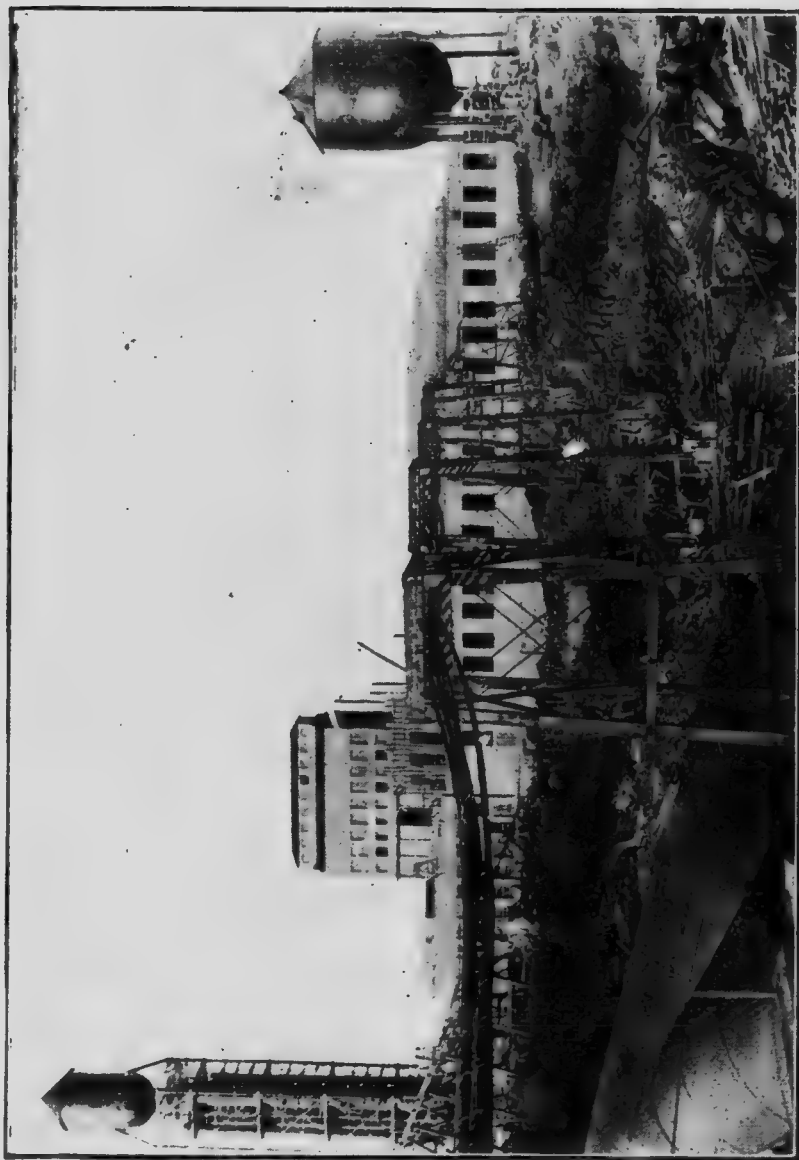
our timber in the form of sawn boards, he realized the possibilities of utilizing the same material for pulp and paper purposes; and when, some few years later, he observed that the Messrs. Harmsworth were looking for suitable forest areas for the manufacture of pulp and paper he approached them with a proposition to acquire his and other territories in Newfoundland, with the result that we now know.

THE LOGGING CENTRE.

Millertown is the centre of a huge watershed running into the Exploits River and possessing areas of some of the best timber in this island. It may be said to be the focus of the whole Harmsworth enterprise, inasmuch as the possession of water powers and mill sites would be of no value unless there existed, within convenient access, an adequate supply of forest wealth to be utilized for manufacturing purposes. Millertown lies on the shore of Red Indian Lake and is reached by twenty miles of railway, constructed by Lewis Miller nine years ago. In his time all the winter cut of saw logs was obtained from the shores of the lake and sawn in two huge mills on the side of the lake, where the little village was established. The mills were very large and splendidly equipped, but are no longer used for that purpose, remaining a monument of unfulfilled expectations, while a mighty iron refuse destroyer, standing one hundred feet above the ground and twenty-five feet around, with an iron lattice work at the top to prevent sparks escaping, illustrates the scale on which Mr. Miller planned and laid out his enterprises.

HOW THE ENTERPRISE STARTED.

After operating for some two or three years he sold out to the Timber Estates Company, at the head of which was Mr. Henry M. Whitney, of Boston, with the late Sir Robert Reid as the second largest shareholder. They operated for a season or two and in the meantime the Messrs. Harmsworth began to consider seriously the possibility of establishing themselves in Newfoundland, instead of in Canada, as they had originally intended. Early in 1903 Mr. M. M. Beeton, now the President of the Harms-



GENERAL VIEW OF MILL BUILDINGS DURING CONSTRUCTION, FROM THE SOUTH

worth enterprise at Grand Falls, first visited the island and made a careful inspection of various timber properties. For two years negotiations were in progress and ultimately, early in 1905, agreements with the different vendor firms for the acquisition of the necessary properties were concluded. The benefits accruing to the Colony from the investment of the huge sums involved in the purchase of these properties, and the starting up of a huge pioneer enterprise were sufficiently obvious, and a measure granting certain concessions was then passed through the Legislature, enabling them to lease an area of about 2,000 square miles, with Red Indian Lake as its centre. This watershed had been explored many years before by Mr. James P. Howley, Director of our Geographical Survey, on behalf of the Government. Mr. William Scott and Mr. M. S. Sullivan, on behalf of the Company, have since concluded an accurate survey of its boundaries. The map shows that the country contains many fine water courses with thickly-wooded valleys, conveniently situated for logging operations, intersecting the large mountain "barrens."

A GREAT PROPERTY.

Red Indian Lake itself is over forty miles long and about three miles wide; and behind it are Lloyd's Lake and King George IV. Lake which, with their connecting rivers, extend as far again. Parallel with this chain run the Victoria River and Victoria Lake, with streams and small lakes behind the latter. The Victoria River, which empties itself into Red Indian Lake near its northern point, is thirty miles long and well wooded. The lower levels of this territory are generously dowered with timber, and it is hoped that under a conservative forestry system the spruce and fir forests will continue to reproduce themselves without the necessity of any artificial reafforestation.

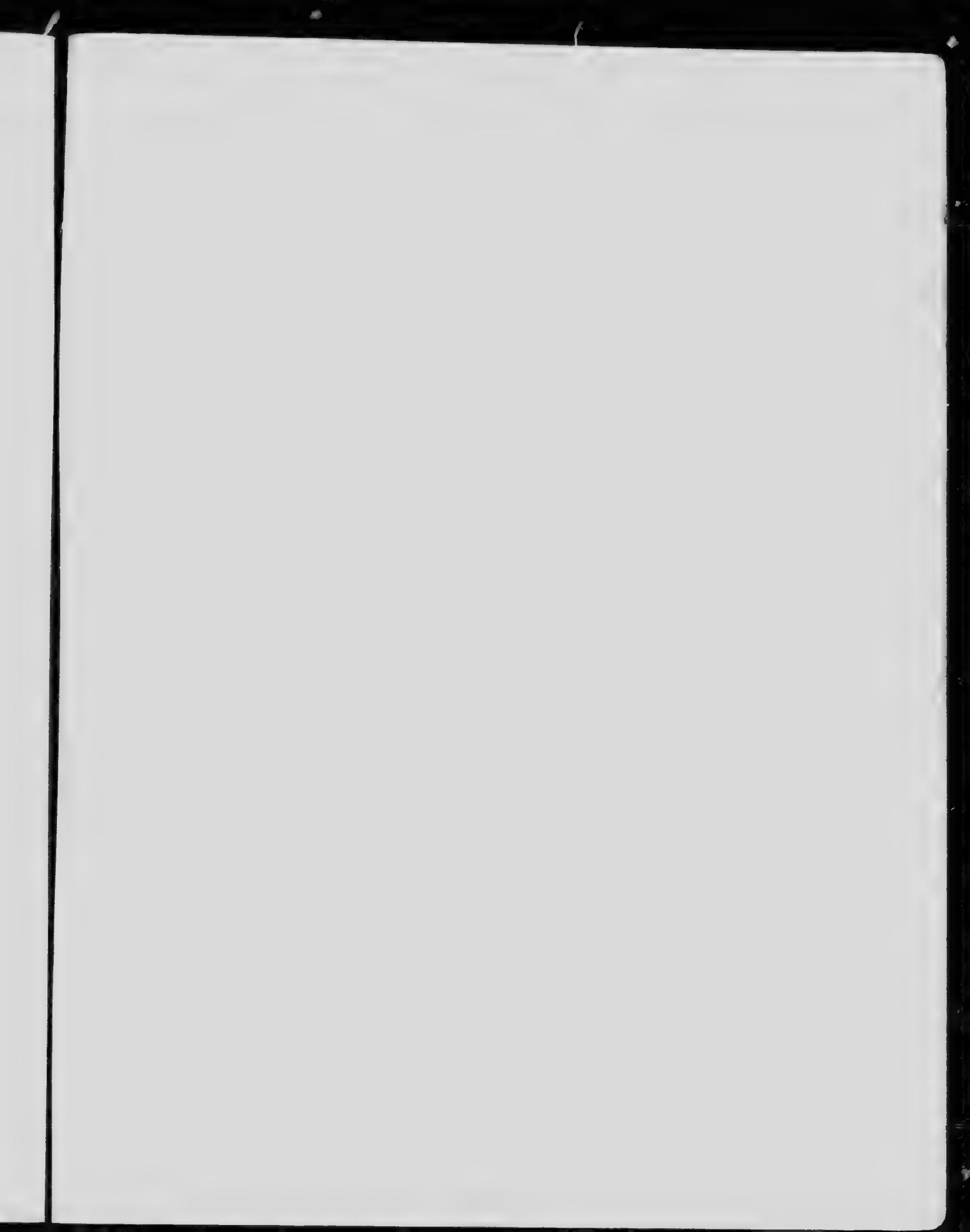
STEAMER ON THE LAKE.

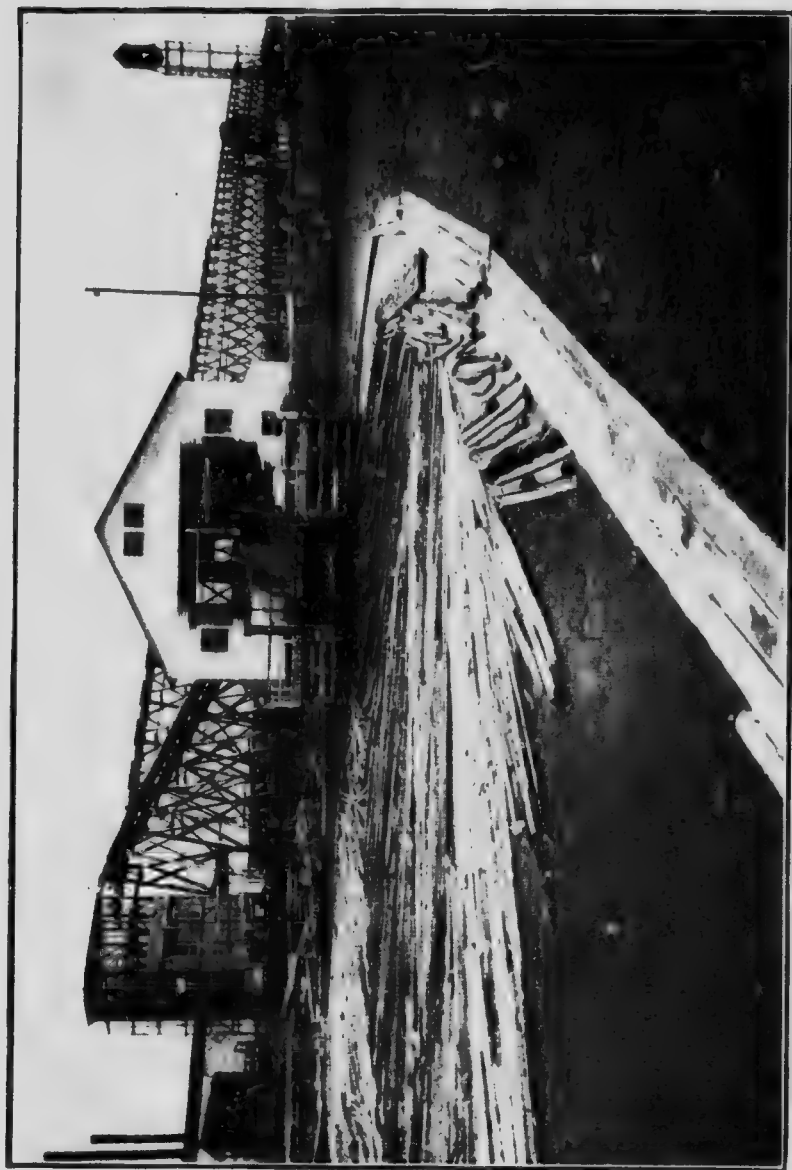
Millertown is utilized as the centre of logging operations. It is a village of from eighty to one hundred houses, occupied by the staff of the Company's offices there, and the foremen and prominent operatives in connection with the enterprise. Perhaps

the most striking example of the changed conditions in our interior is the presence on Red Indian Lake of a steamer as large as the tug John Green, of this port. Her gross tonnage is about one hundred and forty tons. She was built at Millertown last winter, engined by the Reid Company the past spring, and made her first trip in May. She is employed constantly, day and night, carrying supplies from Millertown to the lumbering camps on the upper portion of Red Indian Lake and towing back "booms" of logs to be driven down the Exploits River to Grand Falls, there to be eaten up by the pulp works. An older and smaller steamer, the Henry M., is also operating there in the same work.

LOGGING OPERATIONS.

Last winter the Company employed a constant force of eight hundred men and one hundred and fifty horses for logging operations around Red Indian Lake. Some thirty-three camps were maintained, operated by thirty contractors, and there were cut 3,047,000 "pieces" or logs, making a total of fifty million feet. Logging begins about the 20th of September and ends at the close of April. Fir and spruce are cut for pulp purposes and pine for saw logs, a goodly supply of the latter being needed to provide for the building of houses for the operatives at Grand Falls and for the necessary wood-work about the mills and other buildings. The logging camps are situated around the shores of the lake and the men work within an area of one mile on each side of the camp, the logging roads extending back not more than the same distance. These roads will be carried back three or four miles as the timber is gradually cut back further each year from the lake point. Each camp numbers from fifteen to thirty men, with horses in proportion. The horses, with a single sleigh, will haul ten to fifteen pieces, and with a double sleigh twenty-five to thirty-five, as it is practically all down-hill to the lake. The opportunity which this industry offers to our people of securing more or less employment during the winter months, when fishing is not possible, is seen by the fact that in last winter's logging campaign more than 3,000 different men were on the Company's books at Millertown, as having worked in the lumber woods for greater or less periods.





THE CUTTING-UP MILL AND PULP LOG CONVEYOR NEARING COMPLETION

"DRIVING" THE LOGS.

To those who have read "The Blazed Trail," that stirring story of lumbering in Michigan, written by Stewart Edward White, the *modus operandi* of the business will be familiar, but for the information of those who have not, one may explain that the logs, as they are cut, are hauled to the side of the lake or stream over roads of winter snow and on to structures called "brows." A trip on Red Indian Lake on the Company's new steamer, the "Lady Mary," named in honor of Lady Northcliffe, will reveal enormous number of these "brows" of logs, in some sections thickly lining the shore for hundreds of yards together. After the ice breaks up and the spring freshets come, these "brows" are launched into the lake and are carried to its outlet into the Exploits River by means of booms, which consist of a number of very large logs connected by chains, within which from 50,000 to 100,000 of the pulp wood logs are "bagged," the whole being brought by the steamer to the river exit. When the stream is in flood the logs are "let go" down the river and guided clear of rapids and other obstructions by the river men, this process being known as the "drive," occasionally, however, the drive of logs gets hung up in the river and then arduous work on the part of the men is necessary to aid in moving the logs forward.

MUCH OF THE WOODLANDS BURNT.

There is one regrettable feature observable in a visit to our interior pulp lands, and it is the presence of such enormous quantities of burnt wood, extensive sections of the country being destroyed every year by forest fires. This wood is not rendered absolutely useless because of this, as it is possible to use a small proportion of *recently* burnt timber in the making of pulp, but it is obvious that the material would be much better if it were unburnt, while burning also destroys the growth of the small trees which would add to the forest wealth if allowed to mature. In order to facilitate operations in Red Indian Lake the Company has during the past twelve months constructed a dam across the Exploits River just where it leaves the lake. The river is at this point about five hundred feet wide and there is a substantial timber crib dam

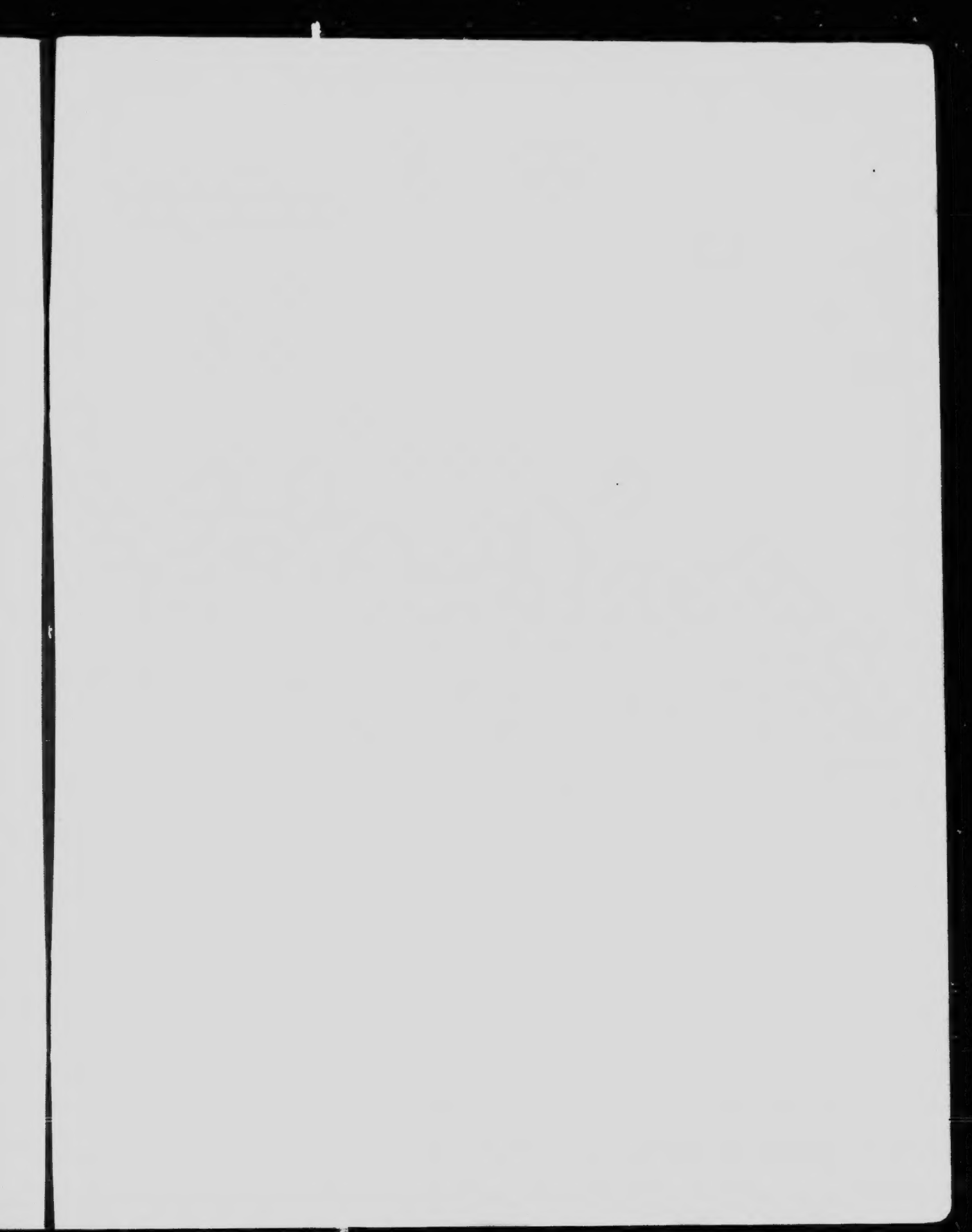
with twenty gates, which can be closed with "stop logs" as occasion requires. As a result there will be an enormous body of water in reserve for general purposes, as the lake will be raised six feet thereby. The course of the river is fifty-six miles from this point to Grand Falls and it is navigable the whole way in a canoe, with but one portage at Red Indian Falls, eighteen miles from the lake. Logging operations at Millertown and Red Indian Lake are under the general direction of Mr. Benjamin Tulk, one of our resourceful Newfoundlanders, who, beginning life as a fisherman, eventually went into the lumbering business on his own account and after serving under Mr. Lewis Miller and the Timber Estates Company, has been appointed Woods Foreman by the Harmsworth Company.

WHAT NEWFOUNDLAND GAINS.

To realize what the establishment of enterprises of such a character in our Island will represent to our people, it is only necessary to take the case of the village of Grand Mere on the St. Lawrence. At this point a Paper Company established its mills and now the place has a population of 5,000, of whom 1,200 are employed in the works. It is estimated that the value of pulp wood as cut from the forest and ready for export is from \$6 to \$7 per cord, while every cord of wood ground to pulp has a value of \$20; made into fibre it has a value of \$30, and converted into paper it has a value of \$40 and upwards, according to the quality of the product. Therefore it will be seen that it is greatly advantageous to this, or to any country, to secure the establishment within its borders of the mills for the making of pulp and paper; and for that reason Newfoundland has good cause to feel gratified that these enterprises are now establishing themselves in our midst.

THE FUTURE.

It is no incautious prediction that within five years after the Harmsworths have begun to make paper every river near our seaboard possessing an adequate water power will have a pulp and paper mill established on it. The eyes of this section of the industrial world are closely fixed at present upon Newfoundland and a number of large publishers and paper





CENTRE AISLE IN THE PAPER MACHINE ROOM.

makers are only awaiting a demonstration of the success of this plant to follow in the footsteps of the Harmsworths. Mr. Gifford Pinchot, head of the Forestry Service of the United States, declares that within twenty years most of the easily accessible standing timber in that country will probably have been exhausted. Canada is also evidencing considerable apprehension for her forest areas, and, therefore, lumber men and pulp men are seeking new areas in this Colony. The Harmsworth territory in our interior is believed to be only one of many, and at Grand Lake, Deer Lake, Hawke's Bay, Bay D'Espoir and other places are tracts which can be profitably enterprised. When in a few months the Harmsworths will actually begin to make paper and when the fact is proclaimed to the world that the mills are in active operation and the success of this great pioneer enterprise thoroughly established, we may confidently look forward to the speedy acquisition by the prominent pulp and paper firms of the world of all the territory which can serve for this purpose. It is not too much to say that with the opening of the mills at Grand Falls there will open a new era for industrial Newfoundland.

P. T. McGRATH.